

### REMARKS

This Application has been carefully reviewed in light of the Office Action mailed January 10, 2007. At the time of the Office Action, Claims 1-18 were pending in this Application. Claims 1-18 were rejected. Applicant respectfully requests reconsideration and favorable action in this case.

#### **Rejections under 35 U.S.C. §103**

Claims 1-7, 9-16 and 18 were rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent 4,296,887 issued to Karl Hoffmann ("Hoffmann") in view of U.S. Patent 4,566,316 issued to Kiyoshi Takeuchi ("Takeuchi"). Applicant respectfully traverses and submits the cited art combinations, even if proper, which Applicant does not concede, does not render the claimed embodiment of the invention obvious.

Claims 8 and 17 were rejected under 35 U.S.C. §103(a) as being unpatentable over Hoffman and Takeuchi as applied to Claims 1 and 10 above, and further in view of U.S. Patent 5,226,397 issued to Sebastian Zabeck et al. ("Zabeck"). Applicant respectfully traverses and submits the cited art combinations, even if proper, which Applicant does not concede, does not render the claimed embodiment of the invention obvious.

In order to establish a *prima facie* case of obviousness, the references cited by the Examiner must disclose all claimed limitations. *In re Royka*, 490 F.2d 981, 180 U.S.P.Q. 580 (C.C.P.A. 1974). Furthermore, according to § 2143 of the Manual of Patent Examining Procedure, to establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable

expectation of success must both be found in the prior art, not in applicant's disclosure. *In re Vaeck*, 947 F.2d 488, 20 U.S.P.Q.2d 1438 (Fed. Cir. 1991).

Claims 1 and 10 recite "the sleeve is provided as a means of translation between the pressure in the combustion chamber and the pressure sensor." The present specification expressly teaches that the sleeve translates so as to communicate changes in pressure in the chamber to the pressure sensor through the sleeve.

A lower end of the sleeve can be assigned to the combustion chamber, an upper end of the sleeve may lie against the pressure sensor, and the sleeve can be disposed *to allow movement in the hole*. [0008]

The pressure sensor is supported on the cylinder head or the injection valve and *the sleeve is arranged to allow movement*. [0010]

In a preferred embodiment the outer surface and/or the inner surface of the sleeve is covered by a protective or lubricating layer. The provision of a protective layer enables the wear and contamination of the sleeve to be reduced. This ensures that *the sleeve is still mounted in a manner enabling it move in the hole even after a long period of operation of the internal combustion engine*. The provision of a lubricant layer reduces friction during installation of the sleeve on the nozzle body or the cylinder head, *so that a change in pressure is recorded precisely*. [0015]

*If the pressure in the combustion chamber 21 and thereby the force on the lower end 14 of the sleeve 13 changes, the pressure sensor 16 records this pressure change and forwards a corresponding signal via lines 20 to a control unit*. [0021]

*An air gap is embodied in each case between the sleeve 13 and the nozzle body 8 or between the sleeve 13 and the cylinder head, so that a frictionless movement of the sleeve 13 is possible*. [0023]

A premise of the rejection appears to be that Hoffmann teaches the claimed invention except that "Hoffmann lacks a piezoelectric pressure sensor positioned between the sleeve and seal." (OA at 2). However, nowhere in the Office Action is it alleged that Hoffmann, or any other prior art reference, teaches a "the sleeve [that] is provided as a means of translation between the pressure in the combustion chamber and the pressure sensor." A *prima facie* case of

obviousness has not been established because the cited prior art fails to teach or suggest a sleeve that is a means of translation. In particular, Hoffmann teaches a sleeve that is unable to translate.

Bushing 20, at one end, has an externally directed flange 21 and at the other end an internally directed, circular sealing lip 22, shaped in form of an internally directed flange. The sealing lip 22 is slightly funnel-shaped or tapered. FIG. 1 illustrates the plug 10 and the heat protecting bushing 20 in sealing and in operating condition. *The end face surface 12 of plug 10 engages the sealing lip 22 of the heat protecting bushing 20.* The flange 21 of bushing 20 is engaged on the shoulder 17 of the cylinder head 14. A clamping nut 24, cooperating with the step or offset 11, is screwed into the cylinder head 24. *Upon tightening the clamping nut 24, in the direction of the arrows P, for example by threading into the block 14, the end face 12 of the plug 10 will press against the sealing lip 22.*

(Hoffmann, 2:30-45) (emphasis added). Thus, Hoffmann expressly teaches that the sealing lip 22 firmly presses against the plug 10 so that the bushing 20 has not ability to translate between the plug 10 and the cylinder head 14.

A second premise of the invention is that it would have been obvious to combine the sensor of Takeuchi with the sleeve of Hoffmann for the purpose of measuring cylinder pressure. However, this premise also fails because, even if this combination could be made, it would not measure cylinder pressure. As noted above, the sealing lip 22 prevents the bushing 20 from translating between the plug 10 and the cylinder head 14 so that changes in cylinder pressure have no communication path to a sensor.

Therefore, the invention as claimed in claims 1 and 10 is patentable in view of Hoffmann and Takeuchi. The invention of claims 2-9 and 11-18 is patentable for similar reasons.

### CONCLUSION

Applicant has made an earnest effort to place this case in condition for allowance in light of the remarks set forth above. Applicant respectfully requests reconsideration of the pending claims.

Applicant believes there are no fees due at this time, however, the Commissioner is hereby authorized to charge any fees necessary or credit any overpayment to Deposit Account No. 50-2148 of Baker Botts L.L.P.

If there are any matters concerning this Application that may be cleared up in a telephone conversation, please contact Applicant's attorney at 512.322.2690.

Respectfully submitted,  
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